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PHOTOGRAPHIC INTERPRETATION REPORT

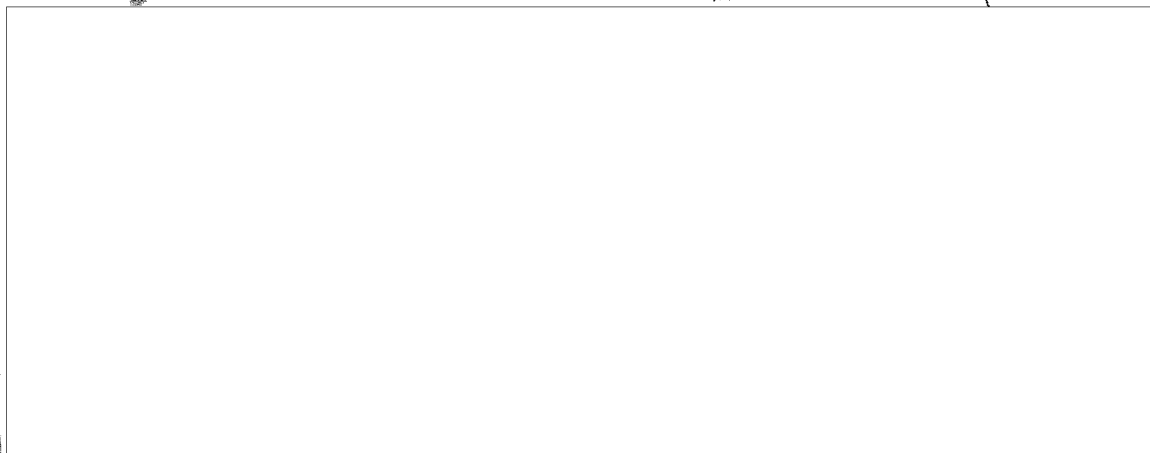
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HIGH-PRIORITY CONSTRUCTION  
NEAR HSING-LUNG-CHUANG, CHINA



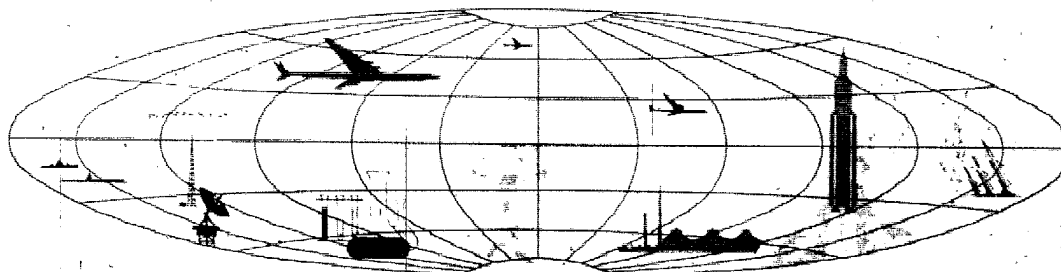
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PHOTOGRAPHIC INTERPRETATION REPORT

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## SUMMARY

Photography of September 1961 through September 1963 has revealed an extensive area of high priority construction activity in a remote section of north-central China near Ching Hai (Lake Koko Nor). No large urban areas are in this vicinity. For purposes of reporting the installation has been identified with the nearby village of Hsing-lung-chuang.

When first observed, the installation was in an early stage of construction, and no determination of its intended function could be made. Even after two years of rapid progress in construction, no specific features can be defined which permit a positive identification of purpose. It was first theorized that the function would be mineral exploitation and processing because the

installation lacked the typical characteristics of other conventional industrial activity. However, subsequent photography has revealed a very intensive and continuing construction effort, a number of detached, isolated areas that are part of the installation, several military entrenchments, extensive power and water facilities, and several unique building and layout features, all of which indicate an eventual function of much higher priority and importance than is normally associated with mineral exploitation. Construction has not progressed far enough and recent photographic coverage has not been complete enough to permit further assessment of its significance.

## INTRODUCTION

The purpose of this report is to describe in detail a large installation under construction in north-central China and thus to facilitate an early determination of its intended function.

Photography has revealed an extraordinary amount of activity at the site. It is evident that the Chinese attach much importance and have given high priority to the project.

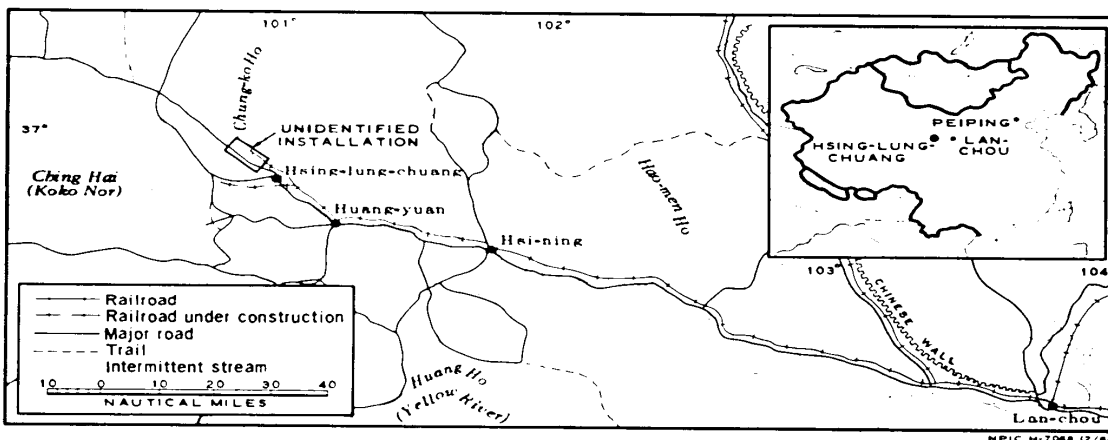


FIGURE 1. LOCATION MAP.

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This installation is located at 36-55N 100-51E in Ching-hai Sheng (Province), a remote area in north-central China (Figure 1). It is 8 nautical miles (nm) east of Ching Hai, a large lake known conventionally as Koko Nor. No large urban areas are in this vicinity, and for purposes of reporting the installation is identified with the nearest village, Hsing-lung-chuang, 4 nm to the southeast. The small town of Huang-yuan is 25 nm to the southeast, and the nearest large urban centers are Hsi-ning 50 nm to the southeast and Lan-chou 155 nm to the southeast.

The site was first seen on far-oblique photography of September 1959 (TALENT Mission [redacted]). At that time agricultural field patterns covered the area, and a road under construction into the area could be observed (Figure 2). Light toned areas of possible earth scarring seen on this photography may represent initial construction efforts at this installation. Photography of September 1961 (KEYHOLE Mission [redacted]) was the first to reveal the installation under construction, and a photographic interpretation re-

port based on this photography was released in January 1962. 1/

Since September 1961, the installation has been covered by several KEYHOLE missions and [redacted]. The latest and best photography from the KEYHOLE missions is that of August 1963 [redacted]. The mission was in February 1962 [redacted] and the large-scale photography from this mission is of extremely high quality, providing an excellent, cloud-free look at details of the construction activity. The [redacted] mission of September 1963 [redacted] provided incomplete coverage because of clouds; despite this limitation, the magnitude and intensity of the construction effort is clearly revealed.

The Hsing-lung-chuang installation has been divided into five areas, each of which is somewhat separate from the others. A description of the installation as a whole and of certain general characteristics of both the area and the installation will precede detailed descriptions of the separate areas in the body of this report.

## GENERAL CHARACTERISTICS

### THE INSTALLATION AND THE TERRAIN

The Hsing-lung-chuang installation extends approximately 8 nm along the Chung-ko Ho, a small stream, and one of its small intermittent tributaries (Figures 3 and 4). The valley in which the installation is situated is oriented in a northwestern/southeastern direction. The major part of the installation occupies about 2,000 acres on the east side of the stream. A smaller portion is immediately west of the stream, and an extension to the northwest consists of four small separated facilities.

The installation has been divided into five areas, designated A through E, each of which appears to have a function somewhat different from

the others (Figure 4). Area A at the southeastern extremity of the complex is the principal industrial area as well as the transportation and storage center for the installation. Area B, immediately northwest of Area A, contains the power plant, several large industrial processing buildings and laboratory/institutional buildings under construction, and extensive housing including a group of apartment buildings nearing completion. Area C, northwest of Area B, is a specialized processing area containing three processing buildings of unusual configuration, a semiburied structure, and two small walled road/rail transfer and storage compounds. Area D, across the stream and west of Areas A, B, and C, is an isolated area in an early stage of

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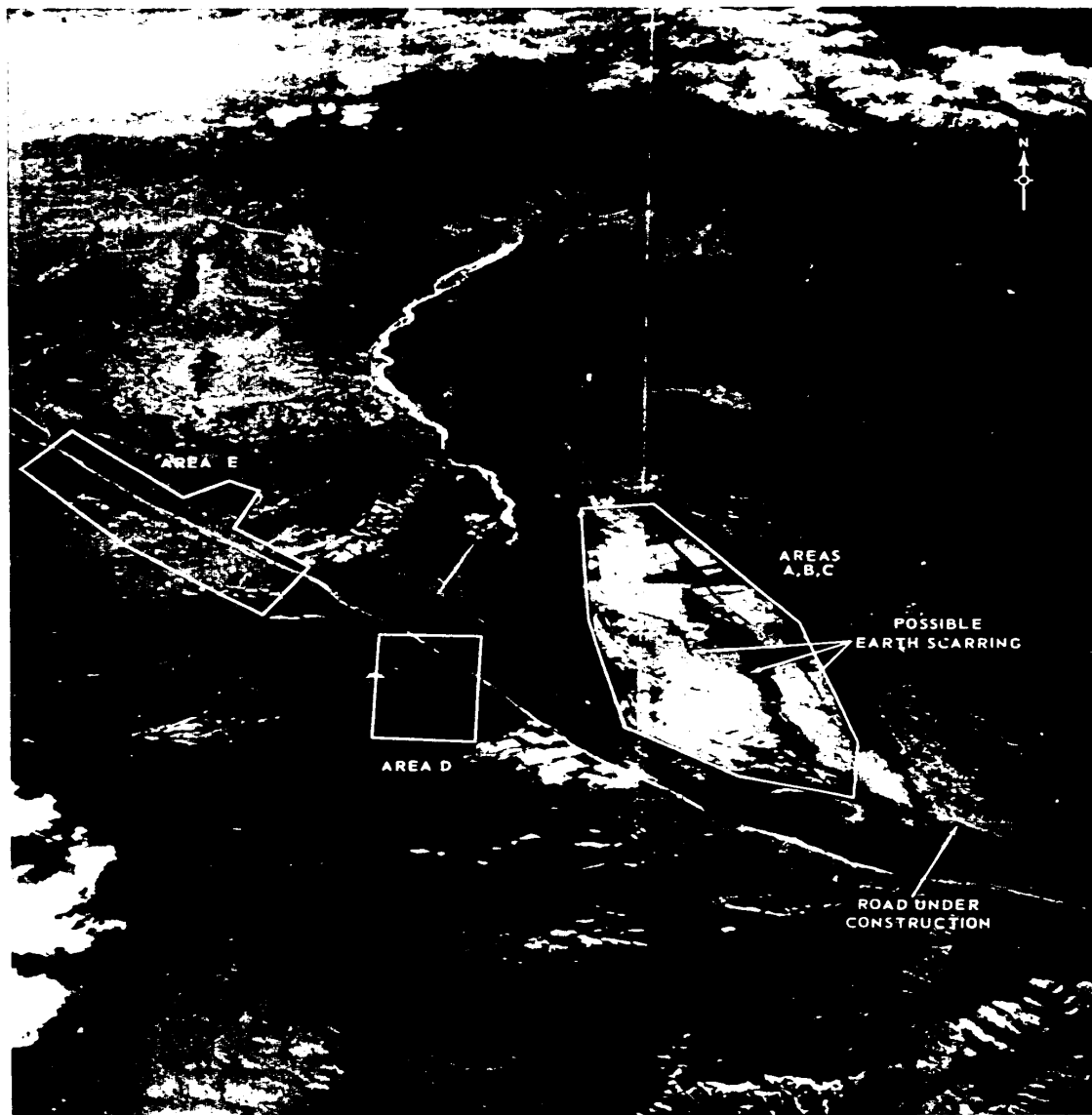


FIGURE 2. Hsing-Lung-Chuang AREA, SEPTEMBER 1959.

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development which contains several massive structures under construction. Area E, northwest of Area D, is also in an early stage of construction and consists of three small isolated storage sites and a checkout facility.

Between the valley in which the installation is located and the lake 8 nm to the west is a mountain range which extends in a northwestern/southeastern direction. A less well-defined mountainous area bounds the valley on the north and northeast. The general elevation of the area in which the installation is located is from 9,000 to 10,000 feet above sea level. Rainfall is sparse, averaging about 14 inches a year with most of it falling late in the summer. Temperatures range from a daily mean of 19°F in January to 64°F in July and August. Ching Hai is frozen during the winter months.

**TRANSPORTATION**

Access to the installation is provided by a road and a railroad, both of which extend northwest from the nearest large settlement of Hsi-ning. No airfields are observed in the vicinity of the installation, although several level areas probably could accommodate light planes.

The main line of the railroad extends from Hsi-ning to a point about 5 nm southeast of the installation. A branch line extends to the installation while the main line, under construction from that point, turns west across the mountain range in the direction of the lake, Ching Hai. The branch line, which passes near the village of Hsing-lung-chuang, terminates in two spurs at two small secured sections of Area C (Figure 4). Within the installation several short spurs extend into various storage and production areas. A seven-track marshalling yard is located in Area A, and a spur from this yard extends south across the Chung-ko Ho to a borrow pit about one nm south of Area A.

Road access is provided by a single road which enters the area from the southeast, paralleling the railroad. This road formerly traversed the entire valley, but it has been interrupted in several places by new construction. It can be observed leaving the area to the northwest, but in this direction the road probably receives only minor use. Within the installation, a road network of unusually high quality is under construction. The roads of this network have several striking features including an extremely wide roadbed (35 to 40 feet), substantial bridges and culverts, and wide-radius turns throughout its extent rather than the normal right-angle turns and junctions. In addition, there are numerous roads and trails used in construction activities throughout the area.

**ELECTRIC POWER**

Electric power for the installation was initially provided by a small thermal electric plant in Area B near the center of the complex. Adjacent to this plant, a much larger power plant which has been under construction may now be completed or near completion. The latest photography of this plant, that of 25 August 1963, revealed piles of coal near the plant's bulk-handling conveyer system, but the stack was not emitting smoke. The estimated capacity of this plant is 25 to 50 megawatts. Numerous power lines are seen within the installation, and additional lines are under construction, including one which extends to a small mining installation 15 nm to the southeast. Trenches for large-capacity steam lines have also been observed throughout the complex.

**WATER SUPPLY**

Water for the installation was originally supplied by numerous small wells scattered

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throughout the area. A larger capacity water system is under construction as evidenced by three large new pipeline ditches which extend more than 3 nm to several wells, by several large water towers, by large underground storage tanks, and by numerous large open pipeline ditches, many of which parallel the older covered pipelines.

**CONSTRUCTION MATERIALS**

Most of the great quantities of materials used for construction are apparently brought to the site by rail. Two large areas of open storage and several areas of covered storage are located adjacent to the railroad. Aggregate is supplied primarily from borrow pits located on the southwestern side of the stream south of Area A. These diggings are connected to the main part of the complex by a rail spur. Although no brick kilns are evident within the installation, several large brick kilns are located 2.5 nm to the southeast.

**SECURITY**

The remote location in an isolated valley surrounded by relatively mountainous terrain provides a degree of security for the installation. Military personnel and several scattered trenches and defense positions supplement the isolation factor. In addition, numerous walls and fences enclose various segments of the installation.

**POSSIBLE RELATED ACTIVITIES**

Two activities in the surrounding area may have possible association with the Hsing-lung-chuang installation, although little if any direct connection was evident as of September 1963. A small mining installation is located in the mountains approximately 15 nm to the east-southeast, and an unidentified activity is observed 10 nm to the west on the shore of Ching Hai.

At the small mining installation there was a considerable increase of activity between photographic missions of February 1962 and September 1963. During that period the piles of tailings more than doubled in size; also, a power line was extended to the mining area from the new power plant in the Hsing-lung-chuang installation. Portions of the access road west of the mining area have been improved, but no direct connection by road from the mining area to the installation under discussion is evident on the latest photography.

The activity on the eastern shore of Ching Hai was present in February 1962. It consists of surface scrapings in the earth parallel to the lake shore and a small group of temporary housing structures. Photography of September 1963 revealed no change, and there was little evidence of activity in the area; however, the roadbed for the rail line under construction west of Hsing-lung-chuang has been extended to this vicinity. A branch of a road which extends west from the village of Hsing-lung-chuang also terminates here.

**DETAILED DESCRIPTIONS****AREA A**

Area A, at the southeastern extremity of the complex, appears to be the major industrial production area and the transportation and stor-

age center of the installation (Figures 5 and 6). There has been considerable increase in construction activity in this area since it was first seen on photography of September 1961.

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FIGURE 5. AREA A, SEPTEMBER 1963.

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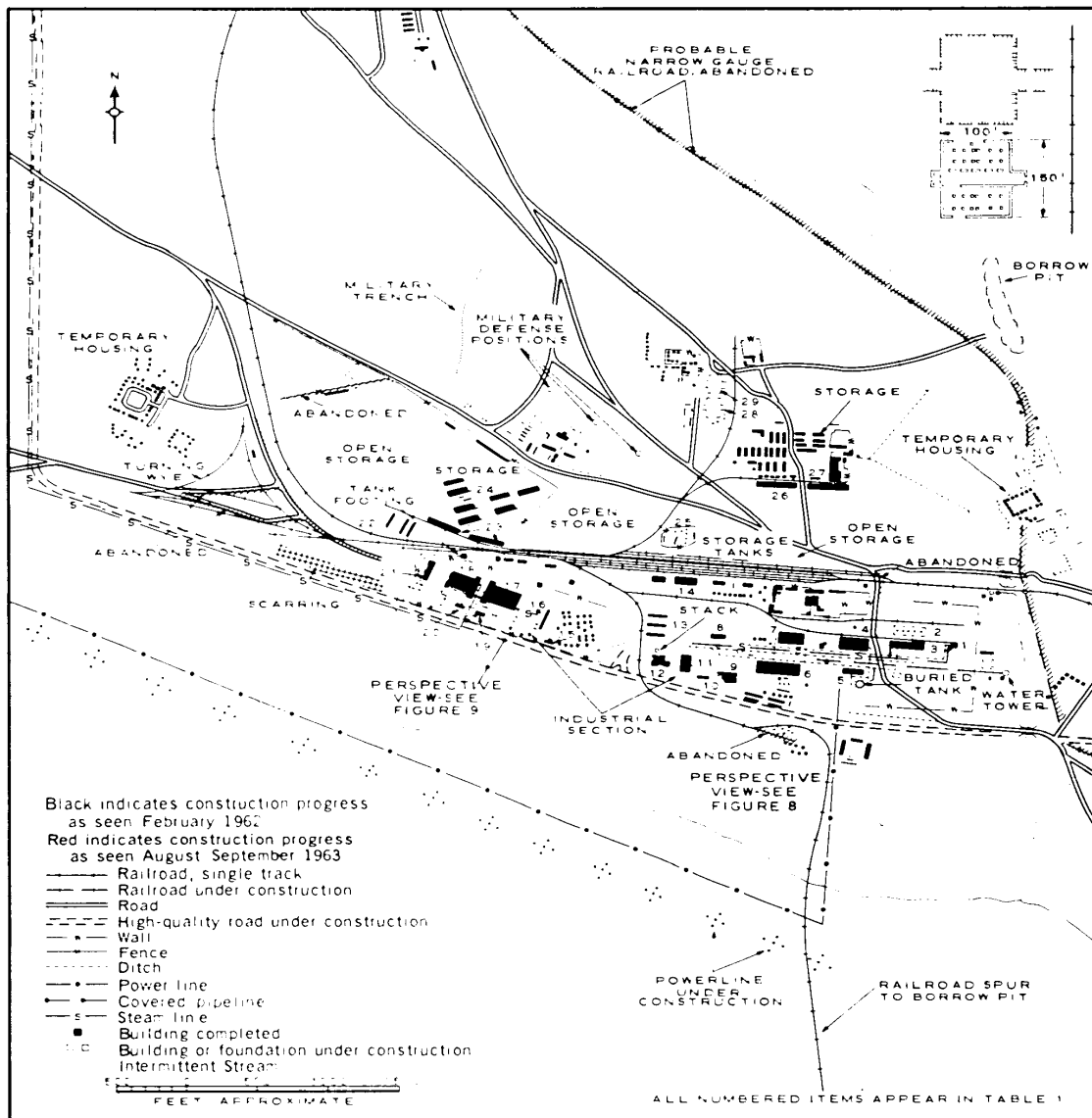


FIGURE 6. AREA A.

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Excellent large-scale photography of Area A was obtained in February 1962 and again in September 1963. Unlike most of the photography of the installation obtained in September 1963, that of Area A was nearly cloud free. The two sets of large-scale photography not only reveal many details of construction in Area A but also permit an evaluation of the pace of the construction effort and of the magnitude of accomplishment during a period of 19 months.

A railroad marshalling yard divides Area A into two parts: an industrial section on the south and a storage and housing section on the north. The rail facilities, the industrial section, and the storage and housing section are described in that order in the following paragraphs.

#### Rail Facilities

In February 1962 the marshalling yard consisted of five tracks, each about 2,500 feet in length (Figure 7). A rail spur extended south from the yard about 1.5 nm, ending at a borrow pit. By September 1963 two tracks had been added to the marshalling yard and a third was under construction; a spur leading into the storage section and another into the industrial section had been completed; a turning wye and several short spurs had also been added on the west end of the marshalling yard in what appears to be a bulk materials storage area (Figures 5 and 6). Most of the rolling stock consisted of empty gondola cars.

#### Industrial Section

The industrial section south of the marshalling yard can be divided into two parts. This division is based on period of development and on the general functions of the structures; the dividing line is the rail spur extending south from the marshalling yard to a borrow pit (Figure

6). The eastern part was developed first and consists primarily of processing-type buildings while the western part consists primarily of fabrication/assembly-type buildings.

In September 1961 the principal facilities in the eastern part consisted of five major industrial buildings (items 3 through 7, Figure 6), all of which were under construction. On the large-scale photography of February 1962 the building exteriors appeared complete or nearly complete; however, ditches for steam and water lines were still uncovered, and much construction clutter and temporary housing were still present. In the western part the only signs of construction activity in February 1962 were the footings for two buildings and, on the northern edge of the section, a large open drainage-type ditch with an oval tank footing (Figure 7).

Photography of August and September 1963 revealed much additional construction in the eastern part of the industrial section. Two processing buildings (items 11 and 12, Figure 6), three large industrial buildings (item 13), several smaller buildings or additions to buildings, foundations for a probable processing building (item 2), and a number of temporary housing units had been constructed. Some steam- and water-line trenches remained open. A wall was under construction along the eastern perimeter of the industrial section, and a new rail spur had been constructed to serve several buildings (items 1, 3, and 4). Nineteen empty gondola cars are visible on this spur on photography of September 1963. A perspective drawing of the eastern part of the industrial section is shown on Figure 8.

A large amount of construction also took place in the western part of the industrial section during the period February 1962 to September 1963. At the end of the period a large monitor-roofed fabrication-type building (item 17) was being roofed, and a similar building

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Table 1. Dimensions and Descriptions of Buildings in Area A  
(Item numbers are keyed to Figure 6)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
1	40 x 20	Flat-roofed industrial building
2	230 x 100	Probable processing building in early stage of construction; exterior walls and single row of footings down long axis of building are under construction
3	Irregular	L-shaped processing building with gable roof; the base of the L is higher than the leg, extends over a rail spur and probably contains a crane; overall dimensions about 200 by 60 feet
4	195 x 105	Multilevel fabrication assembly building with monitor roof
5	140 x 45	Processing building; gable roof with raised center section
6	295 x 80	Processing building; gable roof with raised, flat-roofed section at west end
7	170 x 85	Processing building; gable roof with a lower flat-roof section at east end
8	140 x 80*	Probable processing building
9	Irregular	Irregularly shaped building; constructed in three parts, the two highest being hip roofed and the lower being flat roofed; overall dimensions about 100 by 80 feet
10	60 x 30	Flat-roofed building
11	150 x 60	Processing building; south end under construction
12	Irregular	Processing building; multilevel and irregularly shaped with overall dimensions of about 115 by 60 feet; adjacent, large, free-standing stack
13	160 x 60*	Three industrial buildings, each with same dimensions
14	150 x 35	Administration apartment building with flat roof
15	Irregular	Probable administration or housing building; hip roof; T-shaped with overall dimensions of about 80 by 80 feet
16	40 x 40	Flat-roofed building
17	255 x 150	Fabrication assembly-type building; two short monitors on roof; raised flat-roofed section on west end
18	220 x 150	Fabrication assembly-type building; two monitors on roof; raised flat-roofed section on east end
19	Irregular	Industrial building; multilevel with flat roof and small stack; overall dimensions 105 by 55 feet
20	55 x 20	Probable administration building with flat roof
21	160 x 40	Industrial building with flat roof
22	135 x 40	Three completed warehouses with gable roofs; two under construction; all with same dimensions
23	250 x 50	Two warehouses with same dimensions and hip roofs
24	175 x 45	Seven warehouses with same dimensions and hip roofs; porchlike or lean-to extensions have been added to four of these buildings since February 1962
25	..	Fenced storage tank compound containing six vertical and three possible semiburied horizontal tanks
26	280 x 40	Two storage buildings with same dimensions; loading platforms along both sides; flat roofs with eight ventilators on each
27	Irregular	Probable housing and livestock structure with gable roof and an adjacent walled compound; overall dimensions 240 by 60 feet
28	Irregular	Cruciform building under construction; overall dimensions about 150 by 100 feet; foundation walls and footings visible; open passageway through center may be designed for a tracking crane (inset, Figure 6)
29	Irregular	Excavation being made for building with same dimensions and shape as adjacent building under construction, item 28 (inset, Figure 6)

\*Item has been seen only on small-scale KEYHOLE photography; therefore, dimensions should be considered less accurate than the others, which were derived from larger scale [ ] photography.

(item 18) was nearing completion. The footings for the latter building had been visible on photography of February 1962. Several smaller

buildings and a cluster of temporary housing units had been completed or were under construction. Numerous open steam- and water-

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FIGURE 7. AREA A, FEBRUARY 1962 (oblique photograph, inverted to keep orientation consistent with Figures 5 and 6).

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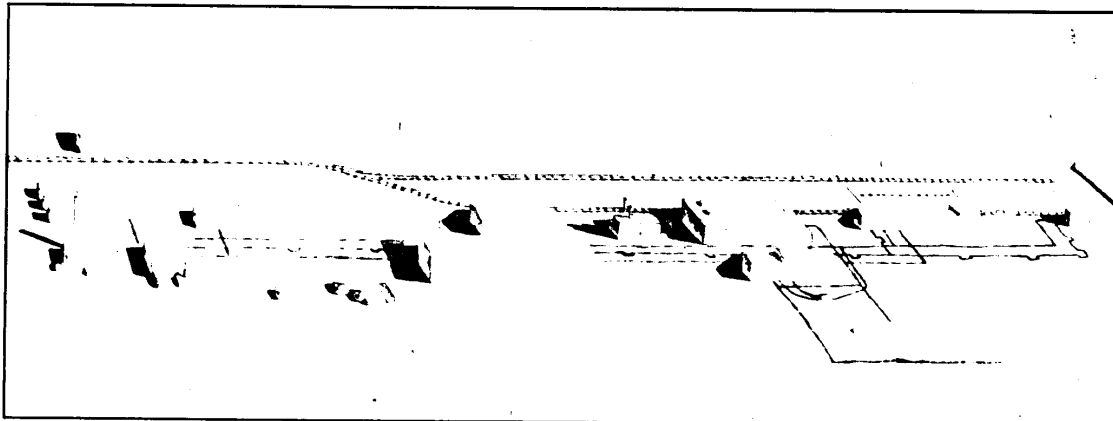
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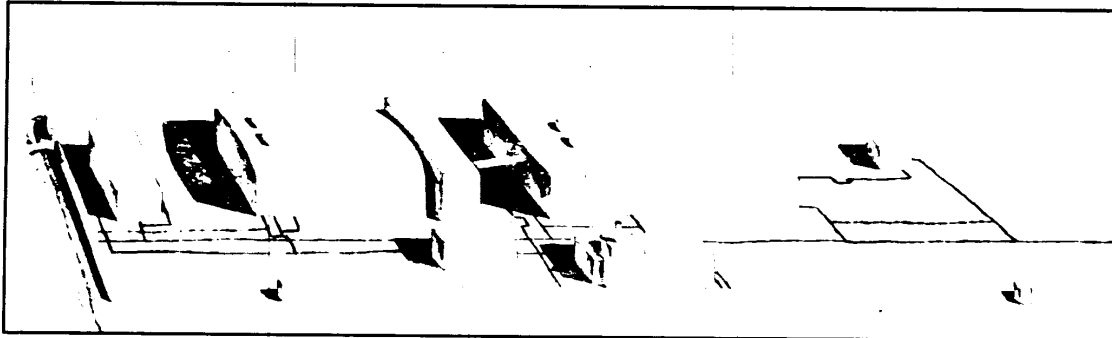
FIGURE 8. EASTERN PART OF THE INDUSTRIAL SECTION, AREA A.

line ditches were present as well as the large open ditch, apparently unchanged, on the western edge of the section. A wall with guard towers was also under construction around the western part of the industrial section, and extensive scarring west of the wall indicated that additional construction was underway. A perspective drawing of the western part of the industrial section is shown on Figure 9.

#### Storage and Housing Section

As of September 1963 the storage and housing section of Area A north of the marshalling yard contained two storage areas, two groups of temporary housing, a probable military camp, and two large structures in an early stage of construction (Figures 5 and 6).

The larger of the two storage areas lies adjacent to the railroad as it curves north from



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FIGURE 9. WESTERN PART OF THE INDUSTRIAL SECTION, AREA A.

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the western end of the marshalling yard. It is fenced, at least on three sides. In September 1963 it contained extensive open storage, 15 storage buildings, two storage buildings under construction (item 22), and a short rail spur. Of the 15 storage buildings, seven were new, and lean-tos had been added to four of the older buildings (item 24).

The other storage area in the eastern part of the section contained two large storage buildings (item 26) served by a new rail spur, an adjacent large building (item 27) with a shedlike roof extension and walled compound (probably for livestock), numerous small storage buildings and sheds, some open storage, and a small fenced storage tank compound. Two large cross-shaped buildings located in the northeastern part of this storage area (items 28 and 29) were in an early stage of construction and appear to be designed for other than a general storage function (inset, Figure 6).

The probable military camp located in the north-central part of the storage and housing section appears similar to the temporary construction camps except for several nearby defense positions and a military trench.

In September 1963 a temporary housing area was located on the eastern edge of Area A and another on the western edge (Figure 6). Each consisted of numerous tents and temporary structures arranged around a quadrangle. These two housing areas were not present in February 1962.

Dimensions and a brief description of the most significant items in Area A, keyed to Figure 6, are presented in Table 1.

## AREA B

Area B is centrally located in the main part of the installation and is the support center of the complex (Figures 10 and 11). It also con-

tains an industrial section, a conspicuous walled compound containing several large industrial buildings. Support facilities include construction materials processing buildings, temporary housing, and the only permanent housing section with associated personnel service buildings in the installation.

Significant changes and rapid progress in construction have taken place in Area B since it was first seen in September 1961. Excellent large-scale [ ] photography of this area was obtained in February 1962 (Figure 12), and the southern half of the area was cloud free when the large-scale photography of September 1963 was obtained. These two sets of photography have permitted an especially clear view of details of construction and of the magnitude of construction activity in much of Area B.

For purposes of reporting, Area B is divided into five sections, each of which has a different function or functions: an industrial section, a power plant section, a laboratory/institutional section, a construction materials processing section, and a housing and storage section. Two new centers of construction activity can also be seen, one immediately north of the power plant and the other north of the industrial section, but their functions cannot yet be determined.

## Industrial Section

This section consists of a walled area measuring 1,320 by 1,140 feet containing three large industrial buildings, a multistory probable administration/housing building, several smaller structures, and two possible underground structures (Figure 13). A military/construction camp is immediately adjacent to the east wall of the compound.

The larger scale photography of February 1962 (inset, Figure 13) revealed the foundations for two of the large industrial buildings, a single

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FIGURE 10. AREA B, AUGUST 1963.

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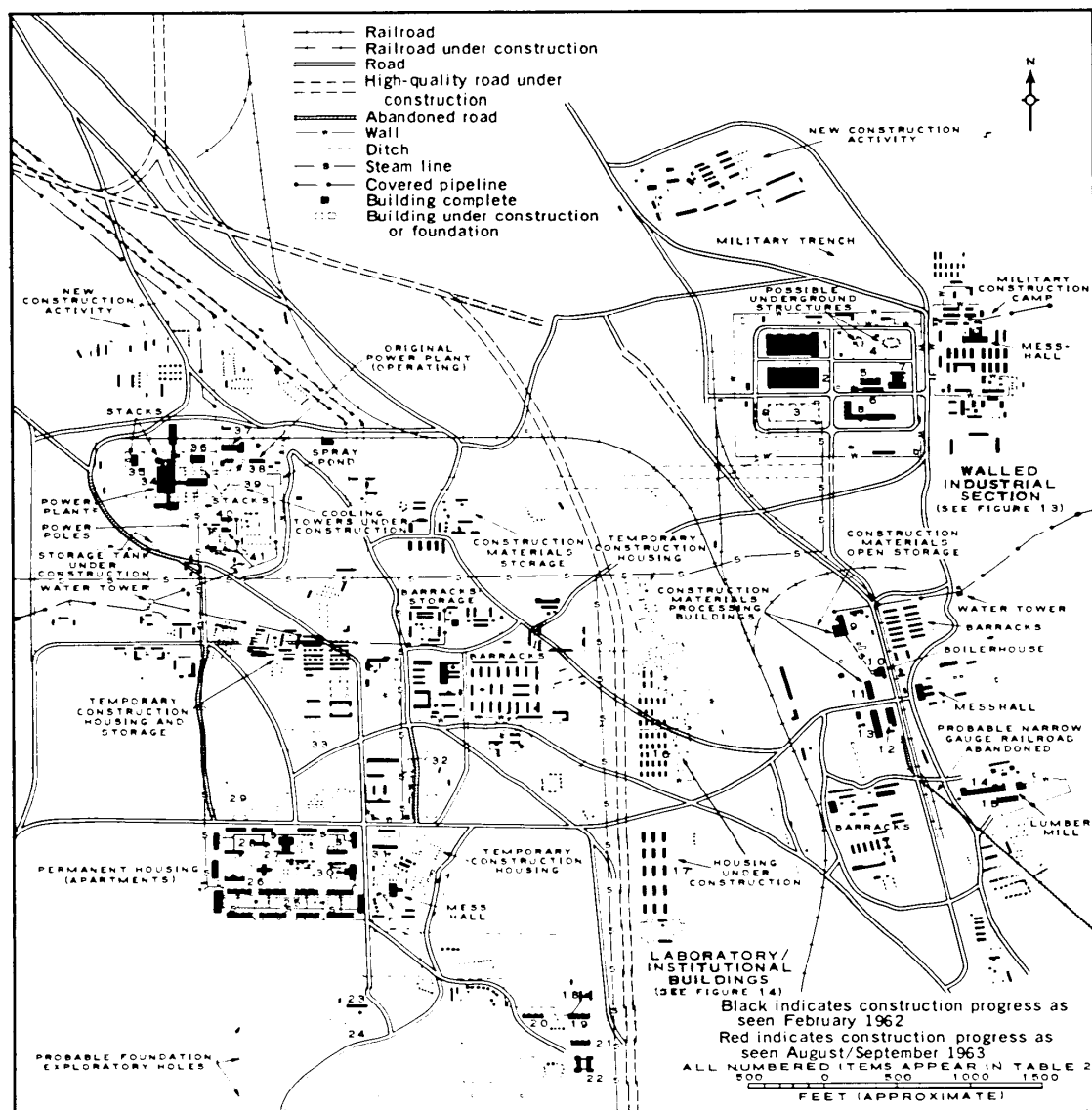


FIGURE 11. AREA B.

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Table 2. Dimensions and Descriptions of Principal Structures in Area B  
(Item numbers are keyed to Figure 11)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
1	350 x 180	Heavy fabrication-type building; gable-roofed except for a flat portion on east end
2	320 x 180	Heavy fabrication-type building under construction; roof appears incomplete; seen only on KEYHOLE photography; a single row of its foundation footings was seen on larger scale [redacted] photography of February 1962
3	330 x 180	Heavy fabrication-type building under construction; exterior walls not yet completed
4	..	Two probable underground structures measuring approximately 65 by 24 and 74 by 45 feet, as seen on large-scale photography of February 1962; two small objects observed on these sites on small-scale photography of August 1963
5	145 x 50	Gable-roofed probable housing administration building
6	Irregular	Gable-roofed construction building; overall dimensions 205 by 45
7	Irregular	Irregularly shaped, multilevel building; overall dimensions about 135 by 105 feet; roof is partly gabled, partly flat
8	340 x 50	Multilevel probable administration housing building with L wing measuring 100 by 40 feet
9	Irregular	Flat-roofed, dual-level processing building for construction material; overall dimensions are 180 by 85 feet
10	Irregular	Boiler house with small adjacent free-standing stack; overall dimensions are 100 by 50 feet
11	90 x 65	Gable-roofed processing building for construction material
12	150 x 55	Gable-roofed storage building for construction materials
13	230 x 55	Gable-roofed storage building for construction materials
14	305 x 55	Gable-roofed lumber mill building
15	145 x 50	Gable-roofed lumber mill building
16	75 x 25	Thirty-nine flat-roofed housing units under construction
17	125 x 20	Fifteen flat-roofed housing units under construction
18	Irregular	Flat-roofed, H-shaped, multistory laboratory, institutional-type building connected to building 19 by a covered passageway; overall dimensions are 135 by 115 feet
19	175 x 45	Flat-roofed, multistory laboratory, institutional building
20	190 x 30	Flat-roofed, multistory laboratory, institutional building
21	175 x 45	Flat-roofed, multistory laboratory, institutional building
22	Irregular	Flat-roofed, H-shaped, one-story laboratory, institutional-type building; overall dimensions are 180 by 50 feet
23	190 x 40	Flat-roofed apartment-type building
24	215 x 45	Building under construction; probably for administration or for apartment housing
25	200 x 40	Ten flat-roofed three-story apartment buildings nearing completion
26	Irregular	Cross-shaped, flat-roofed institutional building; probable health center; overall dimensions are 165 by 105 feet
27	Irregular	Personnel services building (recreation, laundry, etc); overall dimensions are 140 by 165 feet
28	150 x 35	Ten flat-roofed, three-story apartment buildings
29	Irregular	Institutional building under construction; probable school; overall dimensions are 340 by 145 feet
30	Irregular	Multilevel, institutional-type building; overall dimensions are 120 by 85 feet
31	200 x 40	Flat-roofed, three-story apartment building under construction
32	Irregular	Massive building under construction; possible auditorium; overall dimensions are 270 by 170 feet
33	Irregular	Building under construction; probable school; overall dimensions are 230 by 190 feet
34	175 x 120	Generator-hall/boiler-house section of power plant under construction
35	75 x 45	Gable-roofed building with a lower, flat-roofed section on north end; adjacent free-standing stack
36	100 x 50	Flat-roofed, dual-level building; probable service building associated with power plant

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Table 2. (Continued)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
37	Irregular	Gable-roofed, multilevel building; probable service building associated with power plant; overall dimensions are 135 by 80 feet
38	130 x 35	Power plant
39	120 x 55	Cooling towers under construction
40	100 x 36	Gable-roofed, one-story possible administration building
41	110 x 25	Two flat-roofed, one-story possible administration buildings

row of holes for the footings of a third building, and the surrounding wall which by that time was completed. This view of the industrial buildings in an early stage of construction showed an internal layout consisting of a large center section divided into two bays and flanked on three sides by smaller rooms. The probable administration/housing building (item 8) at that time had a complete first floor, and work was beginning on additional stories and upon an L addition.

Photography of August 1963 (inset, Figure 13) revealed numerous changes in this section. The northern and central industrial buildings (items 1 and 2) were nearing completion, but the southern building (item 3) was still unroofed. The L-shaped building was several stories high with several levels, and two small objects appeared to occupy the sites of the previously identified probable underground structures. The wall had been breached in several places to admit steam lines and additional roads, and a service rail spur had been built just outside the western wall.

#### Power Plant Section

The power plant section is in the northwestern part of Area B. It consists of a small operational power plant (item 38, Figure 11), a much larger power plant (item 34) under construction (inset, Figure 12), and associated buildings. When first seen on large-scale

photography of February 1962, the smaller plant was operational as was indicated by a smoking stack, operating spray ponds, and adjacent piles of coal. The exterior of the large plant appeared complete at that time, but a considerable amount of construction debris, scarring, and open ditches for steam and water lines in the vicinity of the plant showed that it was not yet operational. KEYHOLE photography of August 1963 clearly revealed the plant, now with adjacent piles of coal; however, no smoke was coming from the stack, and a large steam-line ditch leading west toward the apartment housing area was still open. The capacity of the larger plant is estimated to be 25 to 50 megawatts.

#### Laboratory/Institutional Section

This section, located in the south-central part of Area B, consists of a cluster of five structures somewhat separate from other parts of the area but with easy access to the permanent apartment housing. Three of the five structures (items 19, 20, and 21, Figure 11) are flat-roofed, multistory buildings and may have a housing function as well as a laboratory/institutional function. The other two structures are lower and have irregular shapes. A walkway or ramp connects one of the higher with one of the lower buildings (Figure 14).

In February 1962 the foundations of the three larger buildings had been laid, and the walls of

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FIGURE 12. AREA B, FEBRUARY 1962 (oblique photograph, inverted to keep orientation consistent with Figures 10 and 11).

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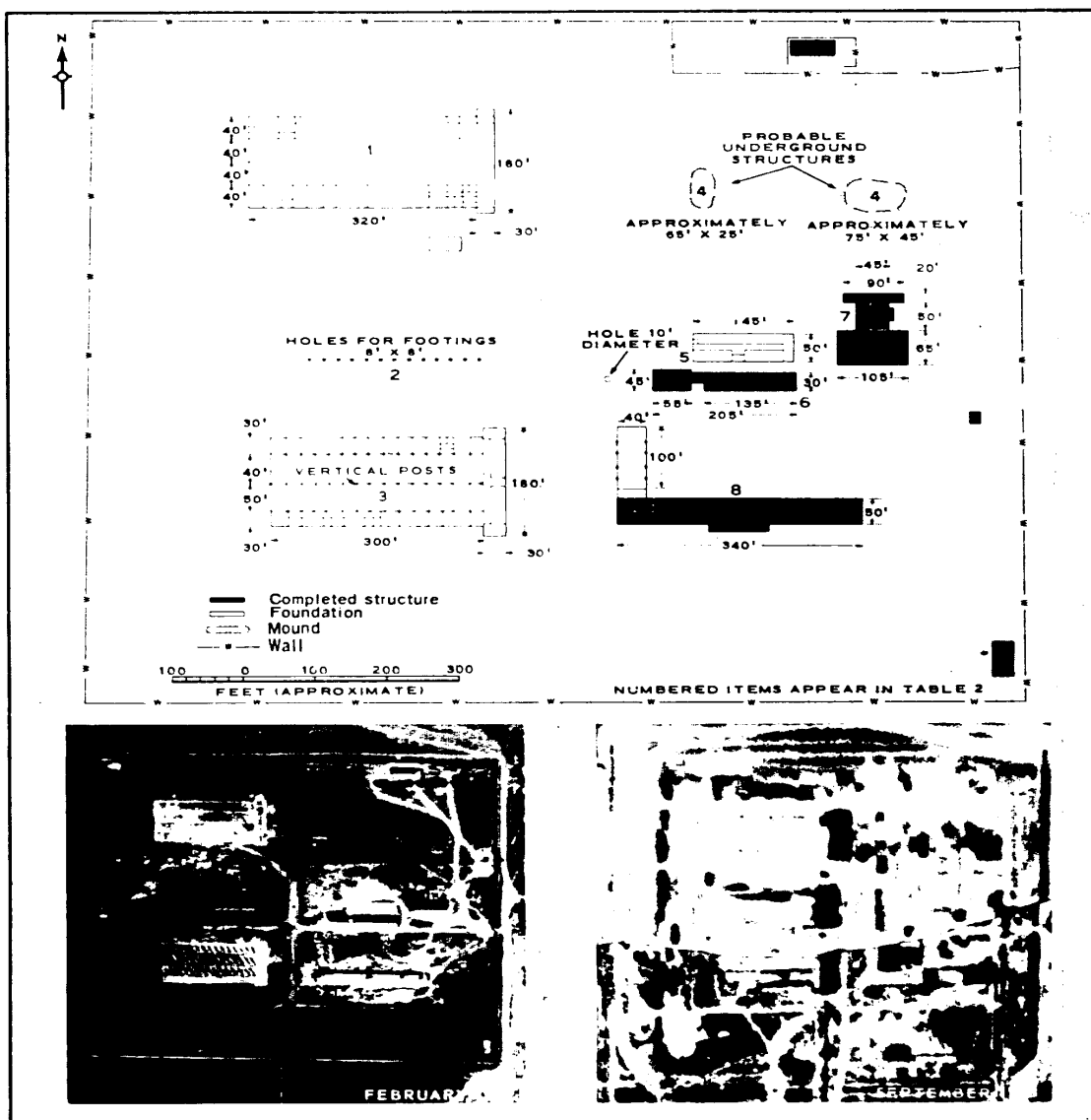


FIGURE 13. WALLED INDUSTRIAL SECTION, AREA B (line drawing based on February 1962 photography).

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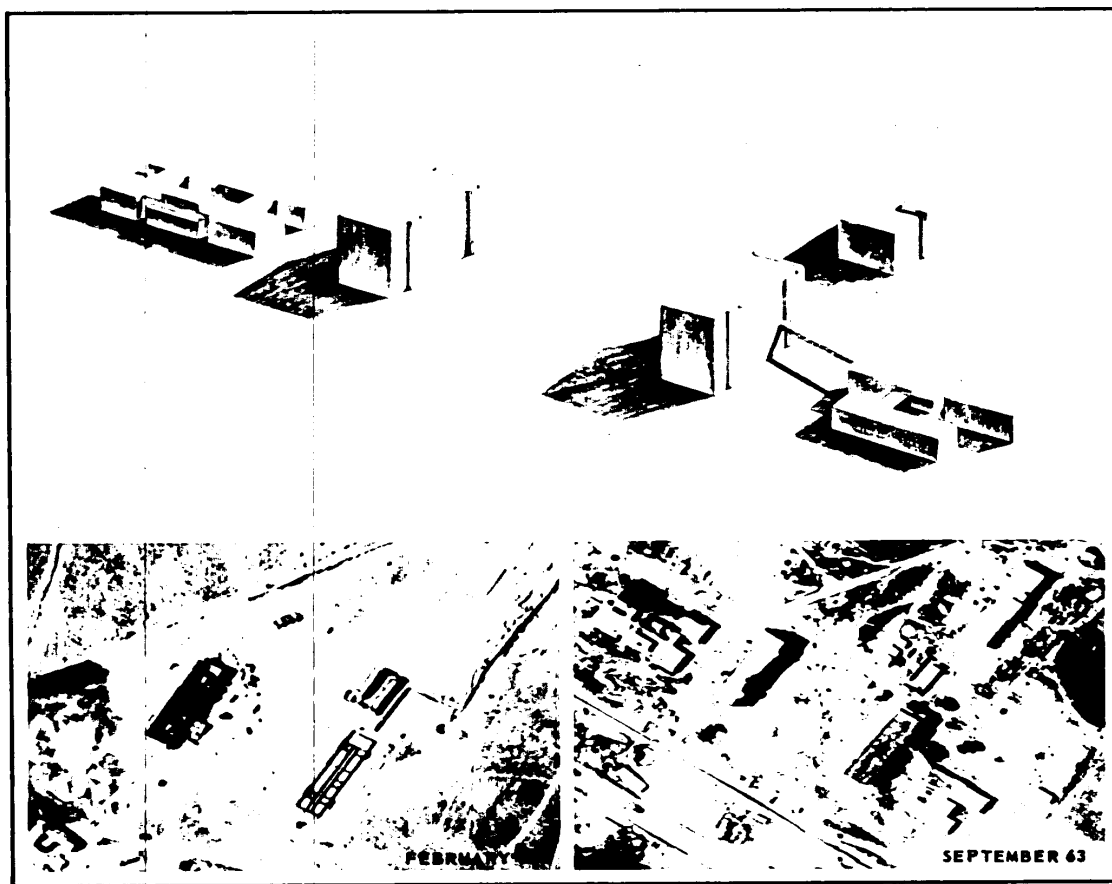


FIGURE 14. LABORATORY INSTITUTIONAL BUILDINGS, AREA B.

one of the buildings were under construction. The layout of all three appeared to consist of a center hall flanked by rooms of various sizes (inset, Figure 14). At that time work had not yet started on the two irregularly shaped structures. Photography of September 1963 (inset, Figure 14) revealed that all five structures were nearing completion with a considerable amount of construction debris remaining in the vicinity.

#### Construction Materials Processing Section

The construction materials processing section is located in the southeastern portion of Area B. It consists of a lumber mill (items 14 and 15, Figure 11) and several processing buildings in which brick, tile, and concrete slabs are probably manufactured. No typical brick kilns are visible, but a flue protrudes from the end of

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one building (item 9), and adjacent to this building are rows of objects that may be piles of tile or brick. A large rail-mounted crane in the open storage area next to this building indicates a capacity for handling large, heavy items, and a steam line connects the building to a small boiler house (item 10). Piles of bulk raw materials, probably aggregate, are also found in the vicinity. Numerous storage buildings and barracks are scattered throughout the area.

#### Housing and Storage Section

This section, which consists of several groups of housing, barracks, and storage buildings, occupies a large part of the middle and southwestern portions of Area B.

Permanent housing, consisting of 21 three-story apartment buildings and associated service buildings, is located in the southwestern part of Area B. In February 1962, eight of these buildings were nearing completion, two were in the mid-construction stage, and seven were in an early stage of foundation construction. By September 1963 all 21 apartment buildings appeared to be either complete or nearly complete externally, although open trenches for steam and water lines, temporary construction shacks, and construction debris still remained. Two sizes of apartment buildings are discernible; the large buildings are 11 in number (items 25 and 31) and are of more recent construction than the others. Each of the larger buildings has three rectangular protuberances and several small ventilators on its roof, unlike the uncluttered roofs of the smaller structures. Several other nearby buildings which are either completed or under construction are difficult to identify but are probably designed to provide personnel services such as recreation, hospitalization, and education.

Two groups of housing (items 16 and 17) that differ both in size and appearance from other

housing in the complex are under construction immediately east of the high-quality road in the center of Area B. The northernmost group (item 16) consists of 39 identical flat-roofed structures separated into three walled compounds. The other group (item 17) consists of 15 identical flat-roofed structures that are larger and much more widely spaced than those of the northern group, and without surrounding walls or fences. The structures of these two groups may represent a type of permanent or semipermanent housing of a quality between that of the lower barracks-type and the higher apartment-type housing. In addition, barracks and storage buildings as well as scattered groups of temporary construction housing are found in the area.

Dimensions and a brief description of the most significant items in Area B, keyed to Figure 11, are presented in Table 2.

#### AREA C

Area C appears to have the specialized function of processing sensitive materials such as explosives or volatile fuels (Figures 15 and 16). It is somewhat separate from the rest of the installation, occupying a position between Areas A and B which have more conventional, industrial-type activities and Area E which has checkout and storage functions.

Activity in this area is focused on three large uniquely shaped processing buildings, each of which is associated with a smaller building (items 1, 2, and 3, Figure 16). The processing buildings are basically rectangular in shape and have a raised roof portion. The associated buildings are also rectangular, and each is parallel to the larger building with which it is associated (Figure 18). An unusual feature of these buildings is the short, curved, enclosed accessways that extend from both ends of each

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FIGURE 15. AREA C, AUGUST 1963.

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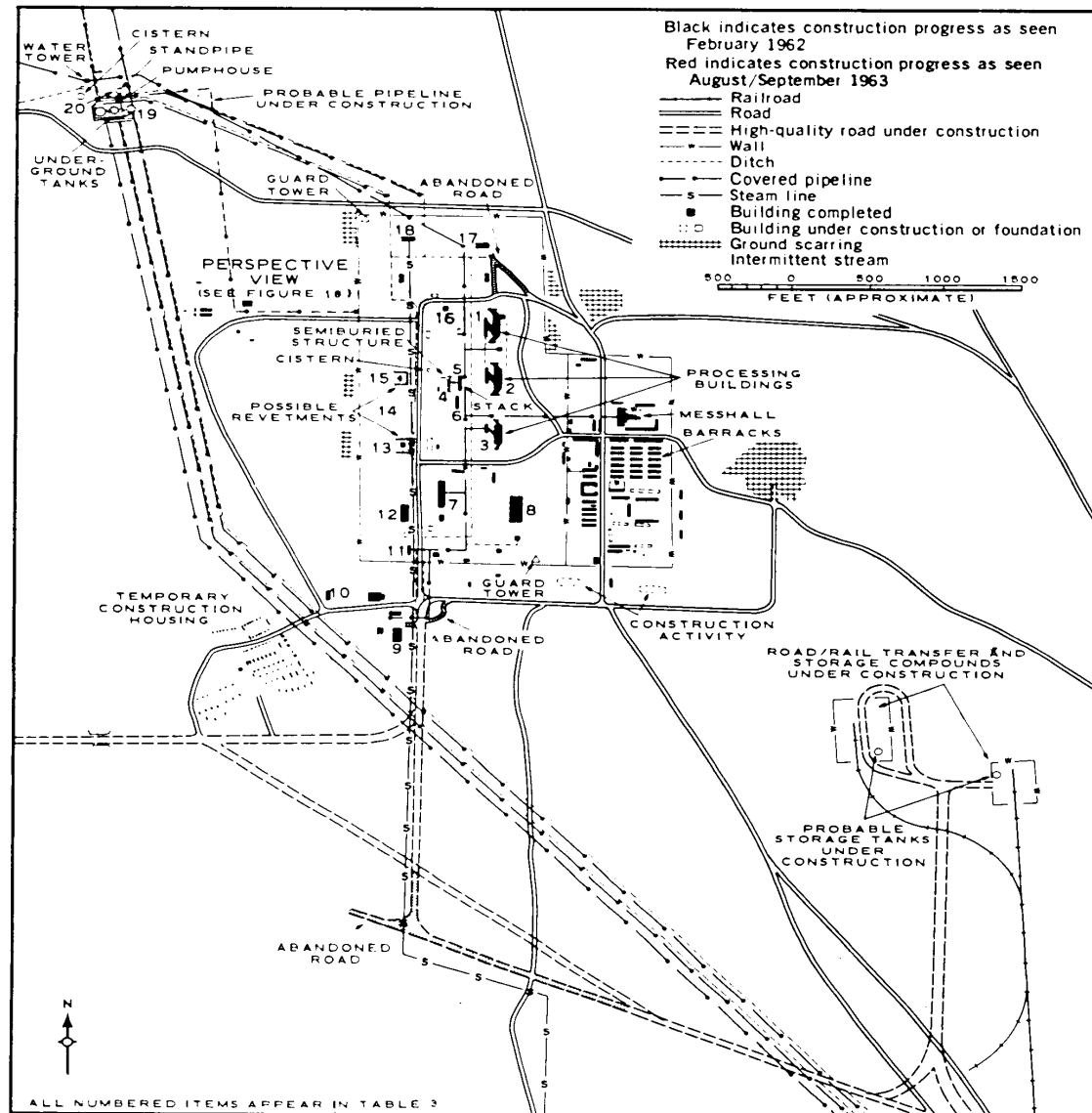


FIGURE 16. AREA C.

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Table 5. Dimensions and Descriptions of the Principal Structures in Area C  
(Item numbers are keyed to Figure 16)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
1	155 x 50	Gable-roofed processing building with high-bay center section; associated with a smaller rectangular building measuring 135 by 25 feet
2	155 x 50	Gable-roofed processing building with high-bay center section; associated with a smaller rectangular building measuring 135 by 25 feet
3	155 x 50	Gable-roofed processing building with high-bay center section; associated with a smaller rectangular building measuring 75 by 25 feet
4	110 x 50	Semi-buried processing building; only the gable roof extends above ground; a conveyor pipeline extends from roof and disappears underground; a covered passageway conveyor connects to building 5
5	100 x 35	Multilevel processing building; a stack extends from lower portion of the roof near south end; a conveyor pipeline connects higher center section to building 4
6	100 x 25	Gable-roofed storage building
7	205 x 40*	Probable processing building; outline of foundation seen on [ ] photography of February 1962
8	200 x 90*	Probable processing building; large, deep footing holes observed in February 1962 indicated a projected structure of considerable size and weight
9	150 x 55*	Probable administration or support building; function indicated by location somewhat removed from processing area; foundation observed in February 1962
10	80 x 55*	One of the highest structures in Area C
11	75 x 25	Flat-roofed production building; raised section at south end
12	145 x 55	Gable-roofed storage building
13	50 x 45	Revetted storage building; gable roof of very low pitch
14	30 x 20	Foundation for storage building; divided into two rooms and entranceway; under construction in February 1962; no further construction evident on KEYHOLE photography of August 1962
15	30 x 20	Revetted storage building with flat roof; identical in size and configuration to adjacent building foundation (item 14)
16	20 x 20	Flat-roofed storage building; possibly revetted
17	85 x 40*	Probable production building; beginning of foundation was seen on [ ] photography of February 1962
18	80 x 30*	Probable production building; beginning of foundation was seen on [ ] photography of February 1962
19	--	Underground tanks; diameters (from west to east) approximately 65, 55, and 50 feet
20	--	Standpipe; diameter 25 feet; height 95 feet

\*Item has been seen only on small-scale KEYHOLE photography; therefore, dimensions should be considered less accurate than the others, which were derived from larger scale [ ] photography.

of the processing buildings and terminate at vertical walls. A similar curved passageway also connects each processing building with its associated building.

On photography of February 1962 [ ] (Figure 17), two of the three processing buildings appeared to be nearing completion, and construction of the third was just beginning. The layout of the footings for the third building indicates that each of the buildings has a large center-bay section with one or two

smaller rooms at each end. The smaller associated buildings appeared to be one-story, flat-roofed buildings, but construction may have started on an additional story or stories. Eighteen months later, KEYHOLE photography of August 1963 (Figure 15) revealed that the third processing building had been completed to a stage corresponding to the status of the other two in February 1962. On the August 1963 photography, the unique configuration of the first two was barely discernible, apparently because

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FIGURE 17. AREA C, FEBRUARY 1962 (oblique photograph, inverted to keep orientation consistent with Figures 15 and 16).

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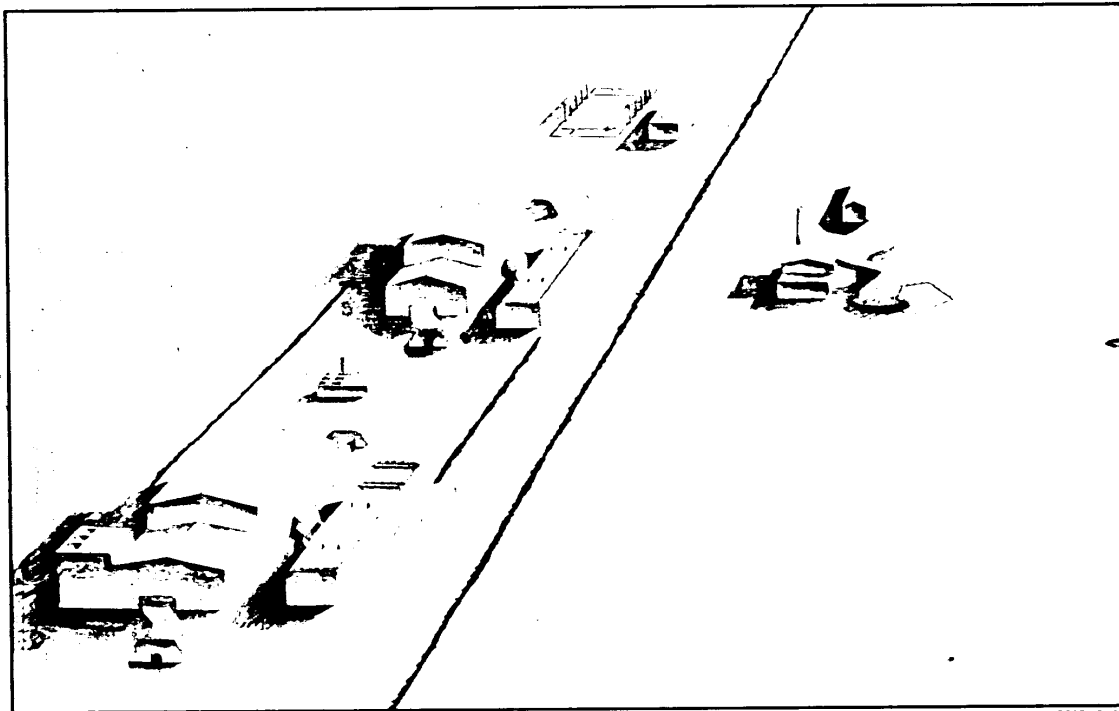


FIGURE 18. PROCESSING BUILDINGS, AREA C (perspective drawing based on February 1962 photography).

the associated buildings had been increased to such a height that their shadows obscured the processing buildings and also because the processing buildings may have been partially covered with earth.

West of the center processing building are two smaller, interconnected structures (items 4 and 5, Figure 16) consisting of a rectangular building with an adjacent stack and a semiburied structure. The rectangular building has a raised roof portion which is connected by an inclined passageway to the semiburied structure (Figure 18). A pipe or conveyer inclines upward from the roof of the semiburied structure, then makes a

near 90-degree downward turn and either ends at the ground or disappears underground. This pipe or conveyer may be connected underground to an open circular cistern 75 feet to the northwest.

Scattered in the area surrounding the main processing buildings are a number of smaller buildings, several of which were under construction in February 1962 but appear complete on the latest photography. Two of these small buildings (items 13 and 15) may be revetted. A wall surrounds the main processing section, enclosing an area measuring 2,700 by 1,300 feet. New ground scarring and recent breaching of the

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wall in several places indicates that the facility is not yet complete. Immediately east of the processing section is a smaller walled compound which contains a construction camp including barracks and a messhall.

Water for the walled facilities was provided initially by an underground pipeline from a small well and water tower in the northwestern portion of Area C. On photography of February 1962, two large open ditches were observed extending from the vicinity of the processing buildings to a large pumping/storage station near the original water tower. By August 1963 these ditches had been covered and an additional ditch in the same vicinity appeared to be in an early stage of excavation.

Ditches with offsets for expansion bends of steam lines were also being excavated in February 1962. On photography of September 1963, similar ditches were in evidence connecting Area C with the main power plant in Area B.

Access to Area C was provided initially by a secondary road. The walled processing area had two road entrances, and numerous construction roads and trails were evident within the walls. The new road network under construction throughout the installation enters Area C from the south. A branch of this network parallels the south wall and turns north, ending in a new area of ground scarring east of the construction camp. On the latest photography this branch road appears to be less prominent and little used.

Southeast and apart from the main processing area are two small walled road/rail transfer and storage compounds which have been included in Area C for convenience in reporting. The rail line serving the installation splits into two spurs and ends in these two compounds. A branch of the new road network also terminates here with a loop through the western compound and a short extension to the eastern compound. These compounds were nonexistent in February 1962 and

were first observed in an early stage of construction on photography of August 1963. Photography of September 1963 revealed that the walls were complete and that two circular objects, probably storage tanks, were under construction. No other structures are discernible in this vicinity.

Dimensions and a brief description of the most significant items in Area C, keyed to Figure 16, are presented in Table 3.

## AREA D

Area D is comparatively isolated with respect to the rest of the installation, being more than 2 nm west of the closely grouped Areas A, B, and C (Figure 4). The area is divided into two separate but road-connected centers of activity which for convenience in reporting are designated the northern and southern segments. The northern segment is about one nm north-northeast of the southern segment (Figures 19 and 20).

Of the five areas making up the installation, construction began most recently in Area D, and its intended function is especially difficult to determine because of the early stage of construction. It does not have the appearance of a conventional industrial area nor does it appear to be designed for storage purposes. The isolated position between industrial fabrication and processing areas (Areas A, B, and C) and a storage area (Area E) suggests an intermediate or special function such as testing, but the large buildings under construction are not, for the most part, types of structures normally associated with testing activities. When construction here reaches a more advanced stage of completion, it is very possible that Area D will provide the key for identifying the intended function of the entire installation.

Area D was first seen on photography from KEYHOLE Mission [ ] of August 1963 (Fig-

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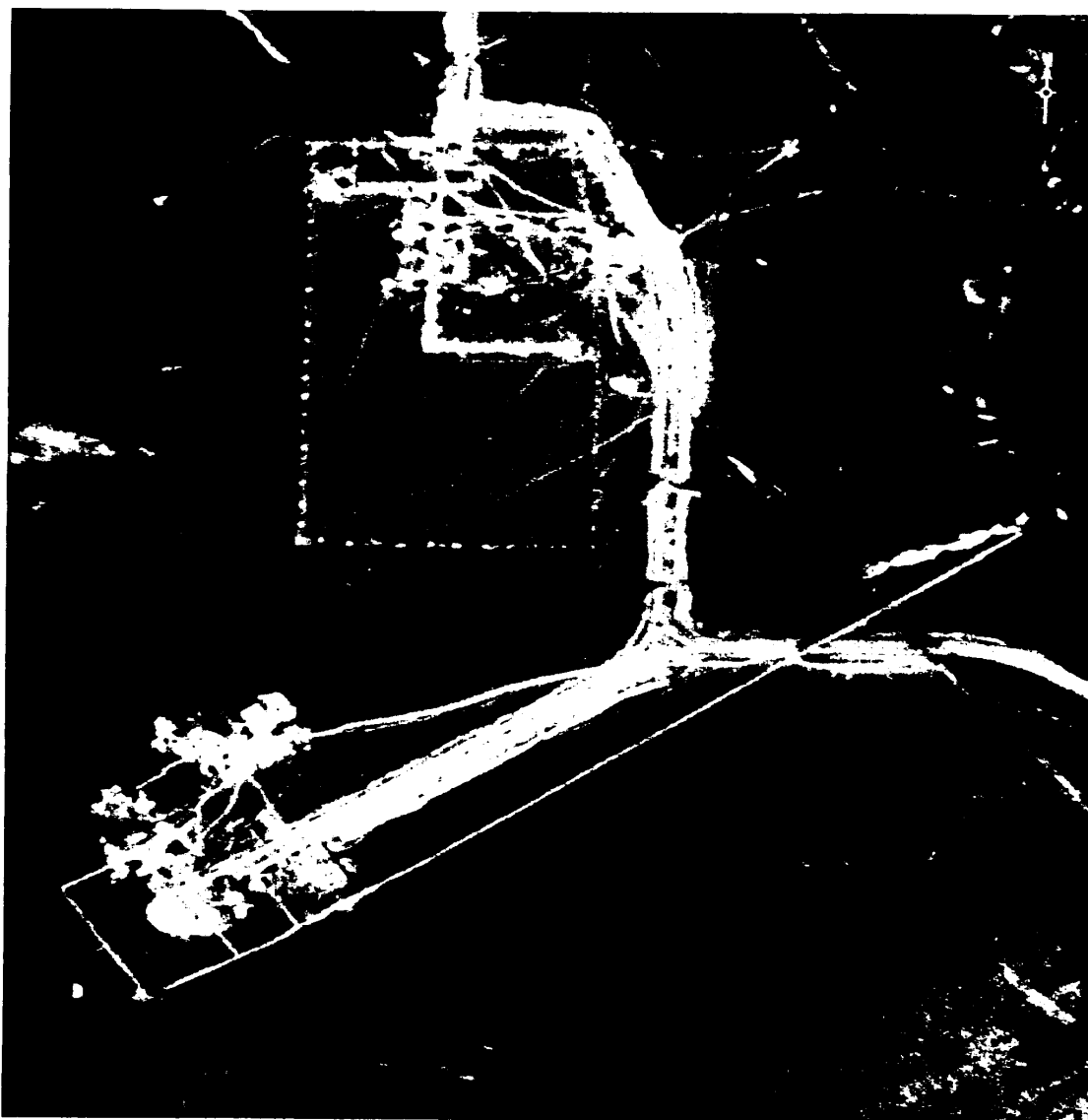


FIGURE 19. AREA D, AUGUST 1963.

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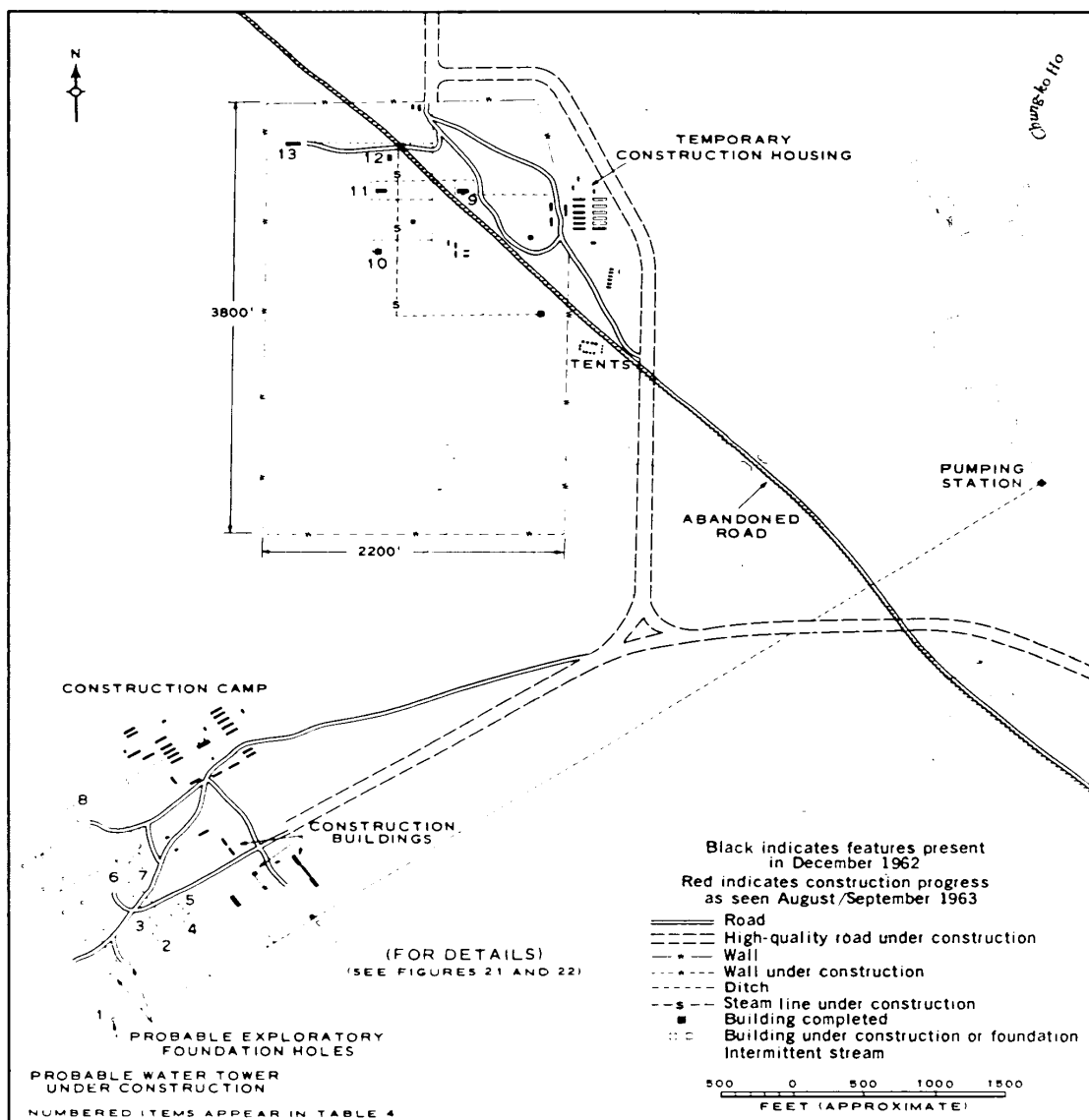


FIGURE 20. AREA D.

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Table 4. Dimensions and Descriptions of Principal Structures in Area D  
(Item numbers are keyed to Figure 20)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
1	..	Tower, 75 feet in height, under construction; probably for water
2	90 x 80	Building under construction; no partitions but extensive scaffolding inside the walls is visible; massive exterior walls of poured concrete are approximately 10 feet thick
3	95 x 60	Building under construction; may connect with item 2 when complete
4	Irregular	Building foundation under construction; overall dimensions approximately 60 by 50 feet
5	120 x 40	Building under construction; walls partially complete
6	190 x 65	Excavation for building foundation being dug; dimensions indefinite because of early stage of construction; deep footings indicate that this will be a building of considerable size
7	120 x 60	Building under construction; adjacent stack, 220 feet in height, still surrounded by scaffolding
8	170 x 50	Building under construction; probably designed to fulfill a housing or administrative function
9	130 x 40*	Building
10	40 x 50*	Building
11	90 x 35*	Building
12	80 x 40*	Building
13	90 x 50*	Building

\*Item has been seen only on small-scale KEYHOLE photography; therefore, dimensions should be considered less accurate than the others which are derived from larger scale [ ] photography.

ure 19). The latest previous photographic coverage had been in December 1962, but no activity was observed in Area D at that time. Therefore, construction observed on photography of August 1963 had been developed during a period of less than eight months. A small portion of the southern segment of Area D was cloud free on the larger scale [ ] photography of September 1963, and details of construction seen on this photography permit an evaluation of the magnitude of the construction effort being expended in Area D (Figures 21 and 22).

The northern and southern segments of Area D are connected, although somewhat indirectly, by a high-quality road which is part of the new network under construction throughout the installation (Figure 4). The road between the two segments extends north to join a main road of the network, and the junction with this main road consists of two wide-radius curves, one leading toward Area E and the other to the main part of the installation. In addition, a branch road is being constructed east toward Area

B. The junction of this branch road with the road between the two segments of Area D also has the characteristic wide-radius curves (Figure 20).

#### Northern Segment

A wall under construction around the northern segment of Area D will encompass an area of approximately 180 acres. As of September 1963, construction activity had been confined to the northern half of this segment. Five structures were present along with numerous tents, temporary construction housing, and several ditches. The largest structure (item 9, Figure 20) measures about 130 by 40 feet.

#### Southern Segment

As of September 1963, the southern segment of Area D did not yet have a fence or wall. Four large buildings (items 2, 3, 7, and 8, Figure 20) were in the early construction stage, the footings for three more structures (items 4, 5, and 6) were visible, and a 220-foot stack adjacent to

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FIGURE 21. SOUTHERN SEGMENT OF AREA D, SEPTEMBER 1963.

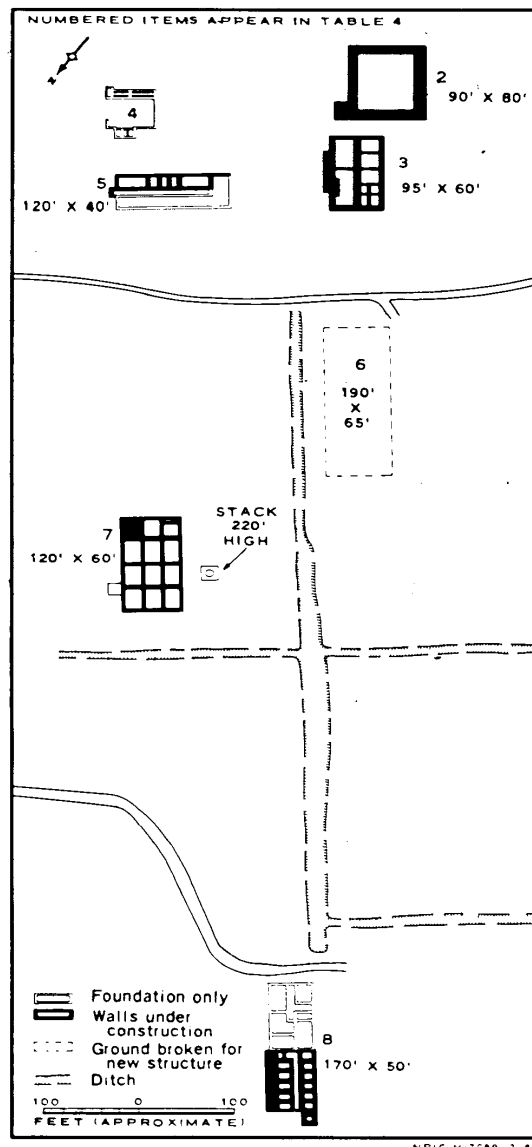


FIGURE 22. SOUTHERN SEGMENT OF AREA D.

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one building (item 7) was still surrounded by scaffolding (Figures 21 and 22). The building in the most advanced stage of construction (item 2) is unique in that it appears to be a large hollow shell without partitions but with massive exterior walls of poured concrete. Temporary housing units and large amounts of construction material were scattered throughout the area. A water-pipeline ditch extends from the southern segment northeast for more than one nm to a pumping station; several connecting branches are under construction within the segment.

Descriptions of major buildings in Area D, keyed to Figures 20 and 22, are presented in Table 4.

## AREA E

Area E is at the northwestern extremity of the installation and occupies an isolated location with respect to the other four areas (Figure 4). The primary function of Area E appears to be the storage of sensitive materials. The area consists of four facilities, each of which is apart from the others by a distance of at least one

nm (Figures 23 and 24). Three of the sites appear to be exclusively for storage. The fourth site, which is located between the storage sites and the main installation, probably fulfills a checkout and storage-preparation function and, secondarily, provides housing and administrative services. The high-quality road network under construction throughout the installation extends to Area E where it interconnects the four sites.

For convenience in reporting, the Area E facility nearest the main part of the installation is designated Checkout Site, and the other facilities are designated Storage Sites 1, 2, and 3 (Figure 24).

## Checkout Site

The Checkout Site is located about 3 nm northwest of the main part of the installation and 2,000 feet south of the main road (Figure 25). It is connected to the main road by a road of the same high quality which serves as a bypass providing access to the site from two directions, both from the storage sites and the installation.

Table 5. Dimensions and Descriptions of the Principal Structures in Area E  
(Item numbers are keyed to Figure 24)

ITEM	DIMENSIONS (FEET)	DESCRIPTION
1	90 x 40	Probable checkout workshop building; multistory and gable roofed
2	155 x 40	Probable housing administration building
3	15 x 15	Revetted building
4	30 x 20	Two revetted buildings with same dimensions
5	50 x 35*	Three structures; possibly bunkered
6	150 x 150*	Possible U-shaped bunker under construction
7	250 x 40*	Long, low structure; possibly semiburied; foundation was in early construction stage in February 1962
8	25 x 25*	Two structures or objects; possibly bunkered
9	100 x 90	Horseshoe-shaped building with raised gable-roofed center section; now earth covered
10	25 x 25	Pentagonal, flat-roofed building; now earth covered
11	25 x 25	Flat-roofed building; bunker between it and other buildings
12	25 x 25	Flat-roofed building; bunker between it and other buildings
13	100 x 100	Excavation in a hillside which may contain a flat-roofed building
14	25 x 25	Probable power substation; flat roof

\*Item has been seen only on small-scale KEYHOLE photography; therefore, dimensions should be considered less accurate than the others, which were derived from larger scale  photography.

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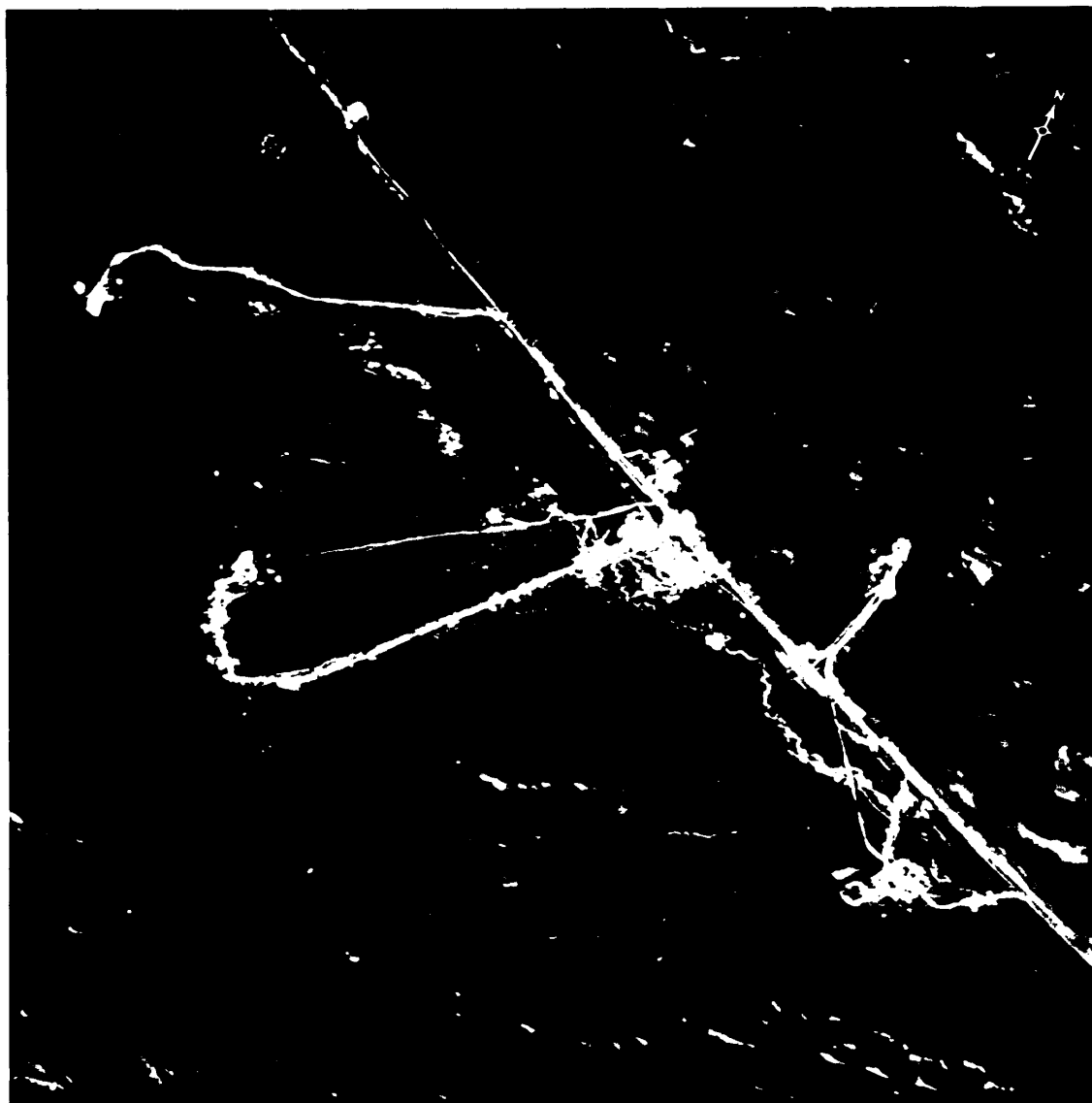


FIGURE 23. AREA E, AUGUST 1963.

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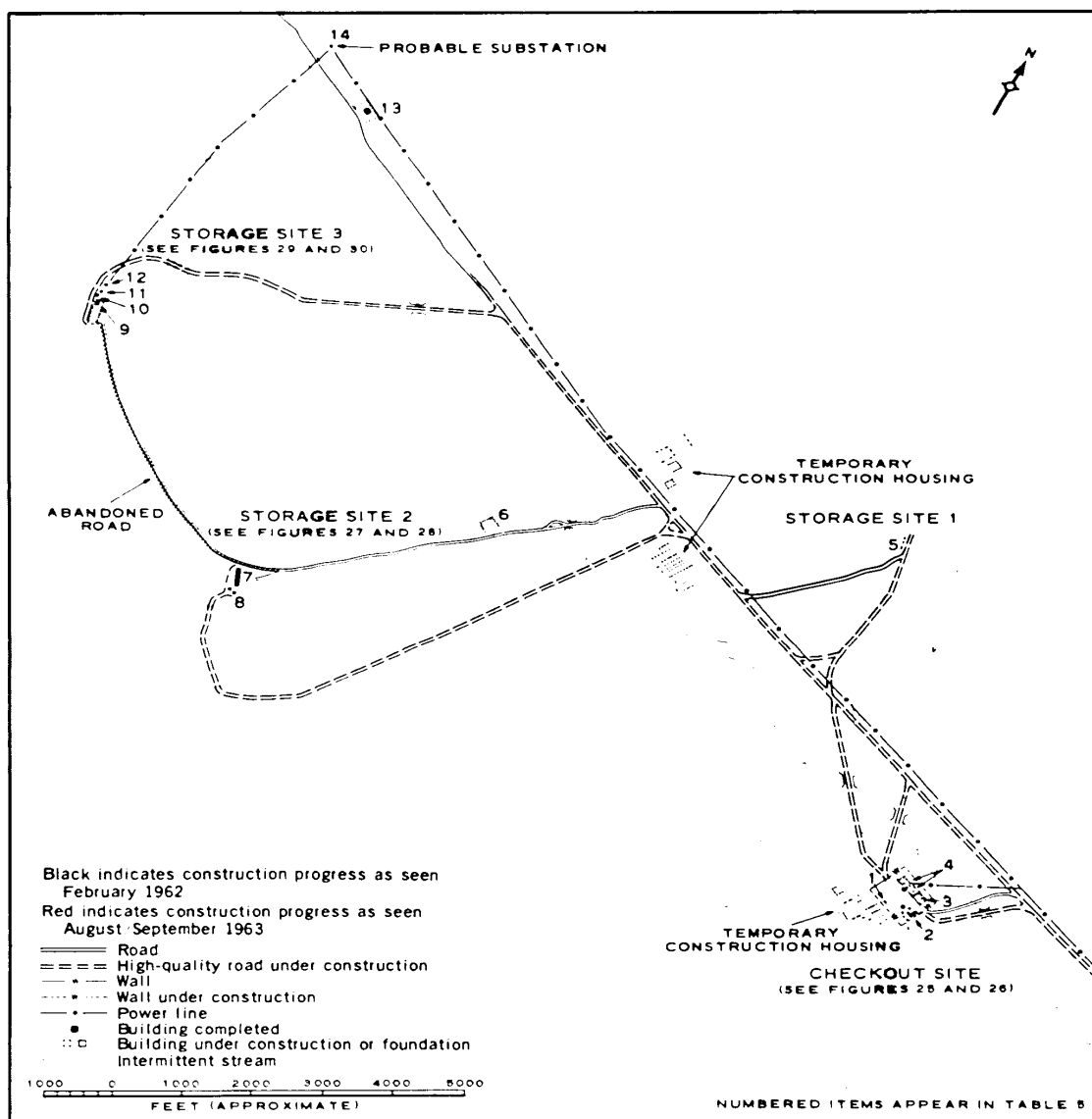


FIGURE 24. AREA E.

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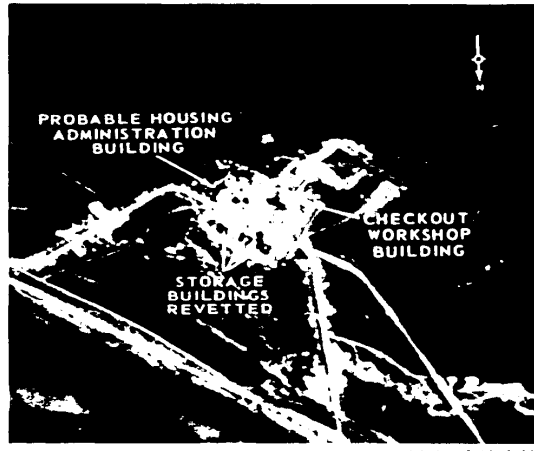


FIGURE 25. CHECKOUT SITE OF AREA E, AUGUST 1963.

A second road under construction leading northwest from the site will provide additional access to the storage sites; it connects directly with the road leading to Storage Site 1 (Figures 23 and 24).

A wall is partially complete around the Checkout Site. Contained within the site are a probable housing administration building under construction (item 2, Figure 24), a checkout workshop building (item 1), three small revetted storage buildings (items 3 and 4), several storage tanks, some temporary construction housing, and a number of smaller miscellaneous structures. This facility was under construction when first seen on photography of September 1961, and details of the early construction can be clearly seen on photography of February 1962 (Figure 26).

#### Storage Site 1

Storage Site 1 is located 2,700 feet north of the main road and is surrounded on three sides by mountain ridges. The three structures comprising the site (item 5, Figure 24) are relatively



FIGURE 26. CHECKOUT SITE OF AREA E, FEBRUARY 1962 (scale is approximately three times greater than that of Figure 25).

close to each other and may be revetted. Construction at the site is not complete. The access road, also still under construction, joins the main road with two wide-radius curves, one leading in the direction of Storage Sites 2 and 3 and the other toward the Checkout Site and the main installation. This indicates an anticipated traffic pattern in both directions.

Of the three storage sites, construction began last at Site 1. The first evidence of activity at this site was construction scarring seen on photography of August 1962 (KEYHOLE Mission [redacted]). No activity had been observed at this location five months earlier on the larger scale [redacted] photography of February 1962.

#### Storage Site 2

Storage Site 2 is located one nm southwest of the main road and is also surrounded by higher terrain. This site apparently contains only one large structure, a long narrow building that is

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FIGURE 27. STORAGE SITE 2 OF AREA E, AUGUST 1963.

possibly semiburied (item 7, Figures 24 and 27), and two small structures or objects (item 8) immediately south of the large building. A road parallels the long axis of the large structure and appears to provide access at both ends.

Shapes and sizes of the structures are difficult to discern on available photography of Storage Site 2 because of the stages of construction at the various times it has been photographed. In February 1962 when the site was in the initial stage of construction, the comparatively large-scale [ ] photography reveals that the foundation of the large structure (item 7) was under construction and that a square excavation and a circular excavation had been dug immediately south of the foundation (Figure 28).

The photography of February 1962 also reveals the beginning of construction on a high-quality access road between the site and the main road. Photography of September 1962 shows that the access road, still under construction, makes a wide loop to the southeast before turning north to join the main road in two wide-radius curves

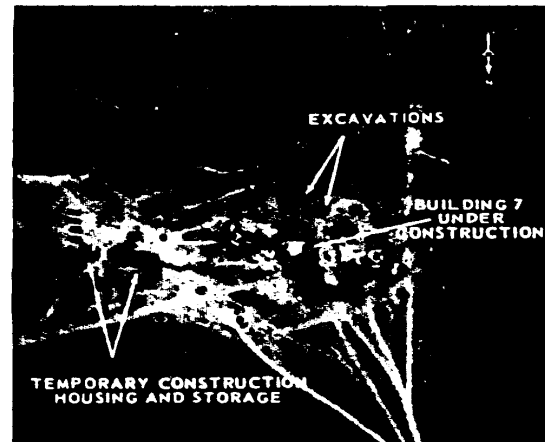


FIGURE 28. STORAGE SITE 2 OF AREA E, FEBRUARY 1962 (scale is approximately three times greater than that of Figure 27).

(Figure 24). There is also a temporary access road to Storage Site 2, for use during construction, that makes a more direct approach than the new road. Adjacent to this temporary road is a small area of scarring (item 6, Figure 24) which may be the beginning of a U-shaped revetment. An extension of the temporary road which connected Storage Sites 2 and 3 has been abandoned and is barely discernible on the latest available photography.

#### Storage Site 3

Storage Site 3 is located one nm west of the main road in an isolated valley. It is the only part of Area E that is not cloud covered on the large-scale [ ] photography of September 1963, but it is seen only on one frame, and the site is in heavy cloud shadow.

In February 1962 construction at this site centered on one large building nearing completion. This building had one straight and three

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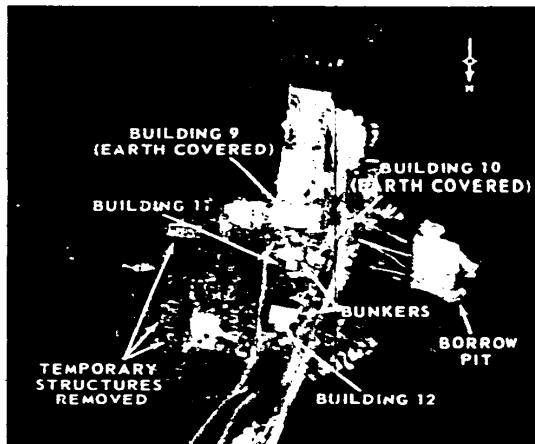


FIGURE 29. STORAGE SITE 3 OF AREA E, SEPTEMBER 1963.

curved sides (similar to the shape of a horse-shoe) and a raised-roof center section (inset, Figure 30). On KEYHOLE photography of August 1963, both the building and extensive digging activity to its rear are readily visible. One month later, as seen on larger scale (GRC) photography of September 1963, the entire building appeared to be earth covered, and a long narrow quonset-type structure to its rear appeared partially covered (Figure 29). This structure appears to be similar to the long narrow building at Storage Site 2 (item 7). The new high-quality access road to Storage Site 3 parallels the long axis of the quonset-type structure and appears to terminate with a curve into the southern end of that structure.

In addition to the large earth-covered structure (item 9), three other structures are visible

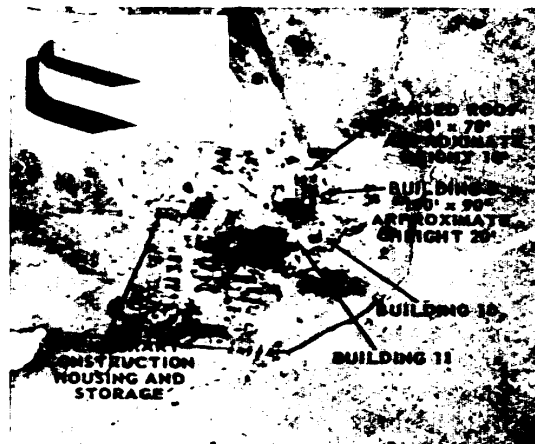


FIGURE 30. STORAGE SITE 3 OF AREA E, FEBRUARY 1962.

at Storage Site 3. Two of these are square, flat-roofed buildings (items 11 and 12), each with an adjacent protecting bunker. The third building (item 10) appears on the latest photography to be earth covered. Two of the three buildings were present in February 1962 (items 10 and 11, Figure 29); the third building (item 12) and the two bunkers were added since that time. Also present in February 1962 but since removed were numerous construction shacks and tents.

One nm to the north-northeast of Storage Site 3 is a small probable electric substation (item 14, Figure 24). Nearby is an excavation in a hillside which may contain a flat-roofed building.

Dimensions and brief descriptions of the most significant items in Area E, keyed to Figure 24, are presented in Table 5.

#### CONCLUSIONS

A determination of the intended function of the Hsing-lung-chuang installation cannot be

made at this time. Construction is incomplete, and the layout, structures, and other facilities

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of this installation cannot presently be correlated with those of known installations. It seems evident, however, that this installation is destined to fulfill a function of greater national strategic importance than that usually associated with standard extraction-, processing-, or fabrication-type industries.

The foregoing conclusion is based on the following general observations:

Isolated location. The fact that this large complex is located in a remote area at least 50 nm from the nearest urban area indicates that the criteria for selection of location is different from that applied in locating the usual industrial facility. The site itself has the natural isolation factor of mountainous terrain on all sides. Proximity to bulk raw materials would be a logical reason for locating a conventional industry in such a remote spot. In this case, however, no natural raw materials in sufficient quantity to support an installation of this size appear to be located in the vicinity. Therefore, isolation itself seems to be a primary reason for the location. In addition, the degree of separation of the various segments of the installation indicates the existence of several inter-related activities, each requiring a degree of isolation from the other.

Speed of Construction. Construction has progressed at an unusually rapid rate. The area was seen on small-scale, far-oblique photography of September 1959, but the installation did not exist at that time. It appeared, however, that an improved road was under construction into the area, and there was possible earth scarring that may have represented initial construction efforts. Two years later (September 1961), when the installation was first seen, much progress had been made in construction, and both a railroad and an improved road had been extended to the area. Since then the installation has been greatly expanded, and construction has

been continued at a rapid rate. The most remarkable effort has taken place in Area D where the status of construction shown in Figures 19 through 22 was achieved during a period of less than eight months.

An unusually high-quality road network. This network with roads 35 to 40 feet wide that connects all elements of the installation is a unique feature not found at a conventional industrial complex, at least not in the degree of excellence found here. The network has wide-radius turns throughout, and road junctions consist of gentle curves in two directions rather than the usual right angles.

Facilities for handling sensitive materials. The unique configuration of the main processing buildings in Area C and their later probable bunkering as well as the bunkering of some of the isolated storage facilities in Area E, which is fully 3 nm from the main installation, indicate the production and handling of sensitive material such as explosives or volatile fuels.

Military activity. Numerous evidences of military activity such as trenches, defense positions, and guard towers are scattered throughout the installation. Although it is known that the Chinese often use troops as laborers on construction projects, the emphasis here upon security and defense indicates the use of troops in other than a routine role as a labor force.

Size and complexity. The installation is a large complex with its various facilities scattered over an area of 15 square miles. To summarize, the more significant features of this complex are as follows:

- A walled fabrication/assembly-type industrial area;
- A processing/fabrication-type industrial area;
- A separate, specialized industrial processing area;

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An isolated area of construction containing a 220-foot stack and massive structures under construction;

Four small isolated areas of activity with bunkered buildings removed several miles from the rest of the installation but connected to it by road;

A very high-quality road network with wide radius turns;

Military entrenchments and defense positions;

A permanent housing area of 21 three-story apartment buildings and a large number of barracks and temporary housing units;

A large power and steam plant with a number of large capacity steam lines;

Extensive water-pumping, water-storage, and pipeline facilities;

A railroad marshalling yard;

Two secured road/rail transfer points.

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## REFERENCES

## PHOTOGRAPHY

Mission	Date	Pass	Camera	Frames	Classification
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## MAPS OR CHARTS

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## REQUIREMENT

CIA. CSIB, 80,534

## NPIC PROJECT

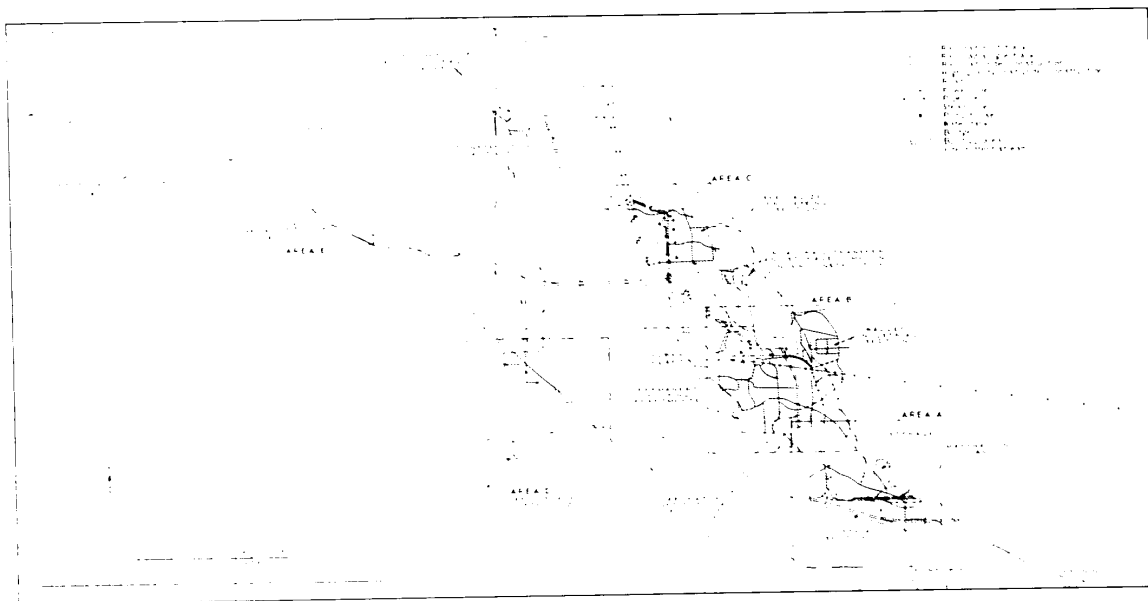
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